

iConverter

iConverter® GM3 Network Interface Devices Carrier-Grade NIDs for 1000Mbps and 100Mbps Ethernet Fiber Access



SFPs not included

- Functions as a Service or Transport Network Interface Device
- 802.3ah Link OAM for per port link monitoring
- 802.1ag Service OAM for end-to-end fault detection and performance monitoring
- Geo-diverse uplink redundancy (1:1) option
- Remote management through TELNET, SNMPv1/v2c/v3 and IP-less 802.3ah OAM extensions
- SNMP management via Omnitron's *NetOutlook*® management software
- 802.1ad VLAN stacking (Q-in-Q) for E-Line and E-LAN service multiplexing
- Granular Rate Limiting using Committed Information Rate (CIR) and Committed Burst Size (CBS)
- Class of Service based on 802.1p QoS prioritization
- Small Form Pluggable (SFP) transceivers for standard or CWDM applications
- Support 100BASE-FX and 1000BASE-X SFPs for interoperability with Gigabit and Fast Ethernet fiber equipment
- Fixed-fiber connectors available for multimode and single-mode dual fiber and single-mode single-fiber
- Customer-facing service port available in copper RJ-45 or SFP Fiber interfaces
- 10,240 byte Jumbo frames
- Commercial, wide and extended temperature ranges
- MEF 9 and 14 Certified Compliant
- Lifetime Warranty and free 24/7 Technical Support

The *iConverter* GM3 is a flexible and cost-effective Network Interface Device (NID). The GM3 can operate as a Transport NID or as a Service NID to provide demarcation functions for in-franchise and out-of-franchise Ethernet service applications.

As a Transport NID, the GM3 operates as a remotely-managed media converter with carrier-grade OAM capabilities. It is service transparent, and passes all data without performing traffic management. The traffic management functions can be performed by the Service Provider at the edge of the network.

As a Service NID, the GM3 provides Service Mapping and Traffic Policing and Shaping. The GM3 supports MEF-certified User-to-Network Interface (UNI) functions such as CoS prioritization, granular rate-limiting, and 802.1ad Provider Bridge VLAN stacking (Q-in-Q) for service multiplexing of multiple E-LINE and E-LAN services.

In both operational modes, the GM3 conforms to the latest carrier-class Ethernet OAM standards. 802.3ah Link OAM proactively monitors the network provider's fiber access link and subscriber link (customer-facing) for physical failures and data errors. The 802.1ag Service OAM provides end-to-end Connectivity Fault Management (CFM) and performance monitoring. These OAM features provide the efficient detection and rapid isolation of potential service problems enabling Service Level Agreement (SLA) assurance while reducing Operational costs (OPEX) of maintaining the network.

The GM3 fiber ports can support Gigabit (1000BASE-X) or Fast Ethernet (100BASE-FX) fiber access links by utilizing an SFP transceiver with the desired data rate. The triple-speed copper interface operates at 1000, 100 or 10Mbps rate. The GM3 is available in 2-port or 3-port options. In the 3-port configuration, the GM3 can be used in geo-diverse redundant applications or in a multi-tenant application with two subscriber ports.

The standalone GM3 is available as a DC powered tabletop or wall-mounted unit that can be ordered with an external AC/DC power adapter or direct terminal connector.



CARRIER-GRADE ETHERNET

Transport NID Functions

- Transparent transport of customer data
- Ethernet OAM
- Comprehensive Fault Detection and Notification
- Media conversion for connectivity to subscriber equipment
- Supports 10,240 byte Jumbo frames
- MEF 9 and 14 Certified Compliant

Service NID Functions

- Supports all Transport NID Functions
- Service Mapping to enable multiple services per UNI
 - > 802.1ad Provider Bridge VLAN stacking (Q-in-Q)
 - > User configurable VLAN EtherType
 - > Service Multiplexing up to 64 EVCs for E-Line or E-LAN services
 - > Layer 2 Control Protocol policy management
- Traffic Policing and Shaping
 - > Granular Rate Limiting
 - Committed Information Rate (CIR)
 - Committed Burst Size (CBS)
 - > Class of Service based on 802.1p QoS prioritization

Ethernet OAM

- 802.3ah Link OAM
 - > Link Loopback
 - > Unidirectional Link Fault Detection
 - > Threshold based monitoring and notification
 - > Dying Gasp
- 802.1ag end-to-end Service OAM and Connectivity Fault Management (CFM)
 - > Supports 8 levels of Maintenance Domains and Maintenance End Points (MEP)
 - > Up to 256 Maintenance Associations
 - > Continuity Check Messages (CCM)
 - > Remote Defect Indication (RDI)
 - > Link Trace
 - > Diagnostic Loopback (Layer 2 PING)
- Performance Monitoring
 - > Frame Delay
 - > Frame Delay Variation (Jitter)
 - > Frame Loss
 - > Service Availability
- Supports Iometrix cNode Level 1 Protocol

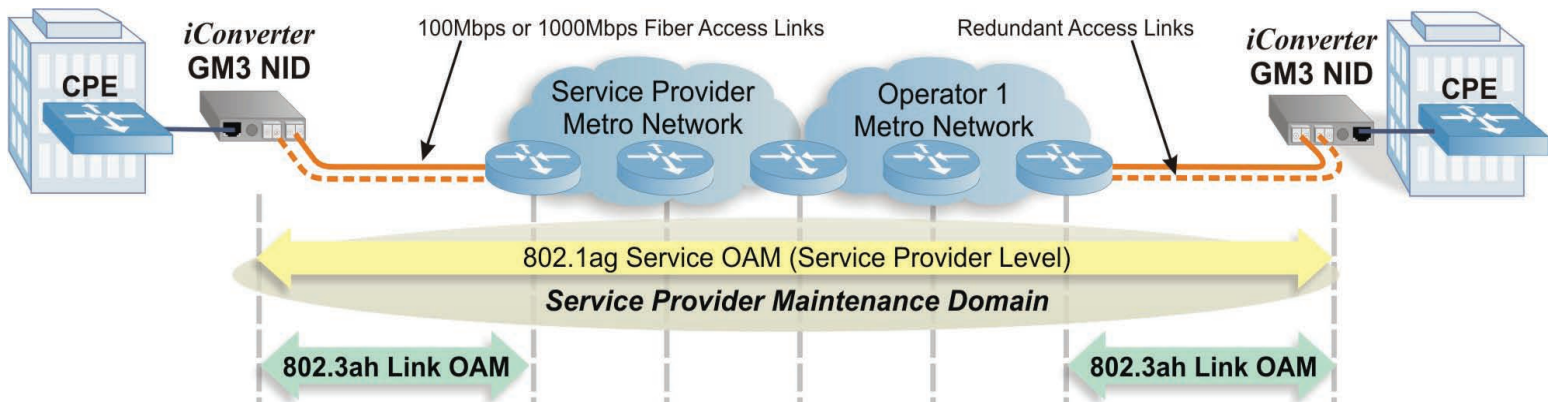
Fault Detection

- Supports a variety of Link Fault Detection and Fault Propagation Features
 - > Link Fault Notifications
 - > Remote Fault Detection
 - > Asymmetrical Link Propagation

INTEGRATED MANAGEMENT

- Local Management
 - > Access via Serial Console Port
- Remote Management
 - > SNMPv1/v2c/v3
 - > SNMP management via Omnitron's *NetOutlook*[®] Management Software
 - > TELNET
 - > IP-less 802.3ah OAM extensions
 - > Access also available via modem and terminal server
- Public (non-proprietary) 802.1ag CFM SNMP MIBs
 - > Easy 3rd party SNMP Management software integration
- SNTP support
- PING (ICMP/ARP)

CARRIER-GRADE OAM



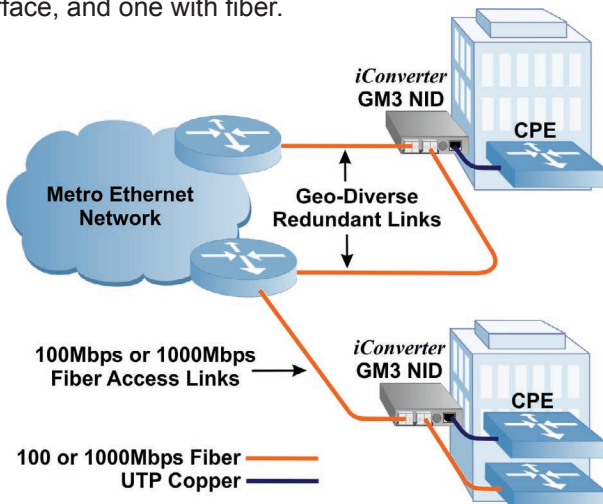
This out-of-franchise (off-net) application illustrates an E-Line service (Ethernet Virtual Circuit) between two customer locations that geographically spans two or more Independent Operator networks. The Service Provider responsible for billing and service contract has installed *iConverter* GM3 NIDs at each subscriber location, which function as the end points of the Service Provider

Maintenance Domain. Through 802.1ag Service OAM, the GM3 NIDs constantly monitor the end-to-end service performance of the network, and the Service Provider has visibility across the Operators' networks for assurance that the contracted Service Level Agreement expectations are being met.

INTERFACES & REDUNDANCY

In this application, the *iConverter* GM3 is used in a geo-diverse redundancy uplink in the upper right of the illustration. This provides a redundant path for mission-critical Enterprise customers. In the event of a fiber break, Rapid Spanning Tree Protocol will detect the failure and activate the redundant fiber link, minimizing interruption of service to critical Enterprise customers.

In the lower right of the illustration, the GM3 is used to deliver Ethernet services to two subscribers, one with a copper interface, and one with fiber.



FEATURES

- Available with dual SFP fiber ports for geo-diverse uplink redundancy (1:1)
- Supports Rapid Spanning Tree Protocol (RSTP)
- Subscriber network service port available in copper RJ-45 or SFP Fiber interfaces
- Three-port configuration supports redundant access link or multi-customer applications
- Supports Gigabit (1000BASE-X) and Fast Ethernet (100BASE-FX) fiber access networks
- Small Form Pluggable (SFP) transceivers for standard or CWDM wavelengths
- SFP transceivers models support maximum fiber distances up to 140km

ORDERING INFORMATION

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<Blank>	Standard Operating Temperature Range Model
W	Wide Operating Temperature Range Model
Z	Extended Operating Temperature Range Model

A	Tabletop with External US AC Power Supply
B	Tabletop with External Universal AC Power Supply
C	Tabletop with DC Terminal Power
D	Wall-Mount with External US AC Power Supply
E	Wall-Mount with External Universal AC Power Supply
F	Wall-Mount with DC Terminal Power

Port Configuration			Fiber Type	Distance	Connector Types			Tx Lambda (nm)	Rx Lambda (nm)	Min. Tx Power (dBm)	Max. Tx Power (dBm)	Min. Rx Sensitivity (dBm)	Max. Rx Power (dBm)	Min Attenuation	Link Budget (dB)
P1	P2	P3			ST	SC	SFP								
FF	UTP	-	MM/DF	220/550m	8920P-0	8922P-0	-	850	850	-10	-4	-17	-3	-	7
FF	UTP	-	SM/DF	12km	8921P-1	8923P-1	-	1310	1310	-9.5	-3	-19.5	-3	-	10
FF	UTP	-	SM/DF	34km	8921P-2	8923P-2	-	1310	1310	-5	0	-23	-3	3	18
FF	UTP	-	SM/DF	80km	-	8923P-3	-	1550	1550	-5	0	-23	-3	3	18
FF	UTP	-	SM/DF	110km	-	8923P-4	-	1550	1550	0	5	-24	-3	8	24
FF	UTP	-	SM/DF	140km	-	8923P-5	-	1550	1550	2	5	-28	-8	13	30
FF	UTP	-	SM/SF	20km	-	8930P-1	-	1310	1550	-9.5	-3	-20	-3	-	10.5
FF	UTP	-	SM/SF	20km	-	8931P-1	-	1550	1310	-9.5	-3	-20	-3	-	10.5
FF	UTP	-	SM/SF	40km	-	8930P-2	-	1310	1550	-3	0	-20	-3	3	17
FF	UTP	-	SM/SF	40km	-	8931P-2	-	1550	1310	-3	0	-20	-3	3	17
SFP	UTP	-	-	-	-	-	8939P-0	See SFP Data Sheet for available transceivers and optical parameters							
SFP	SFP	UTP	-	-	-	-	8975P-0	See SFP Data Sheet for available transceivers and optical parameters							
SFP	SFP	-	-	-	-	-	8999P-0	See SFP Data Sheet for available transceivers and optical parameters							

FF - Fixed Fiber, UTP - Unshielded Twisted Pair, SFP - Small Form Pluggable Transceiver

SPECIFICATIONS

Description	10/100/1000BASE-T to 1000BASE-X Network Interface Device
Protocols	10BASE-T, 100BASE-TX, 1000BASE-T, 100BASE-FX, 1000BASE-X
Frame Size	up to 10,240 bytes
UTP Cable	EIA/TIA 568 A/B, Category 5 and higher
Fiber Cable	Multimode: 50/125um, 62.5/125um, 100/140um Single-mode: 9/125um
Serial Cable	RS-232, 22 to 24 AWG, 12 to 50 pF/ft.
UTP Connector	RJ-45
Fiber Connectors	
SFP:	LC, RJ45 (1000, 10/100/1000Mbps)
Dual Fiber:	SC, ST
Single-Fiber:	SC
Serial Connector	Mini DIN-6 female; Mini DIN-6 male to DB-9 female adapter included
Temperature	
Standard Operating	0 to 50° C
Wide Operating	-40 to 60° C
Extended Operating	-40 to 75° C
Storage	-40 to 80° C

DC Power Input Connector	2.5mm Barrel Connector or 2-Pin Terminal Connector
DC Power	8 - 32VDC 0.60A @ 9VDC (typical) 0.45A @ 12VDC (typical)
AC Power Adapter (US) via 2.5mm Barrel Connector	100 - 120VAC/60Hz 0.1A @ 120VAC (typical)
AC Power Adapter (Universal) via 2.5mm Barrel Connector	100 - 240VAC/50 - 60Hz 0.1A @ 120VAC (typical)
Dimensions	Tabletop: W: 3.1" x D: 4.8" x H: 1.0" Wall-Mount: W: 3.8" x D: 4.8" x H: 1.0"
Weight without power adapter	1.0 lb.
Weight with power adapter	1.5 lb.
Compliances	UL, cUL, CE, FCC Class A, MEF 9, MEF 14
IP-Based Management	Telnet, SNMPv1, SNMPv2c, SNMPv3
Other Protocols	TCP/IP, ICMP, ARP, RSTP, SNTP, DAYTIME
Humidity	5% to 95% (non-condensing)
Altitude	-100m to 4,000m
MTBF (hrs)	Without Power Adapter: 420,000 hrs With US Power Adapter: 250,000 hrs With Universal Power Adapter: 100,000 hrs

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091-8920P-001A

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